POLISH HEART JOURNAL

Kardiologia Polska
The Official Peer-reviewed Journal of the Polish Cardiac Society since 1957

Online first
This is a provisional PDF only. Copyedited and fully formatted version will be made available soon

ISSN 0022–9032 e-ISSN 1897–4279

Lipomatous hypertrophy of the interatrial septum: A benign heart anomaly that may complicate transseptal puncture

Authors: Mateusz Dziarmaga, Bartosz Żuchowski, Andrzej Minczykowski, Andrzej Wykrętowicz

Article type: Clinical vignette

Received: February 7, 2024

Accepted: April 8, 2024

Early publication date: April 22, 2024

Lipomatous hypertrophy of the interatrial septum: A benign heart anomaly that may complicate transseptal puncture

Short title: Lipomatous hypertrophy of the interatrial septum

Mateusz Dziarmaga, Bartosz Żuchowski, Andrzej Minczykowski, Andrzej Wykrętowicz

Department of Cardiology Intensive Therapy, Poznan University of Medical Sciences, Poznań, Poland

Correspondence to:
Mateusz Dziarmaga, MD, PhD,
Department of Cardiology Intensive Therapy,
Poznan University of Medical Sciences,
Przybyszewskiego 49, 60–355 Poznań, Poland
phone: + 48 61 869 13 91,
e-mail: dziarmaga.mateusz@gmail.com

We present a case of a 72-year-old male with tachycardia-induced cardiomyopathy related to persistent atrial fibrillation with accompanying lipomatous hypertrophy of the interatrial septum (LHIS), successfully treated with cryoablation of pulmonary veins.

The patient's symptoms included: palpitations, dyspnoea on exertion and peripheral oedema. Previous cardioversions had been ineffective. The Patient was overweight (body mass index: 31 kg/m$^{2)}$ with a past medical history of: chronic coronary syndrome treated by the percutaneous coronary intervention of the circumflex artery, hypertension, hyperlipidemia, chronic kidney disease stage G3B, type 2 diabetes mellitus, hyperthyroidism, and radioactive iodine therapy. Left ventricular ejection fraction was estimated at 37%. The electrocardiogram revealed atrial fibrillation with rapid ventricular rate (100–120 beats per minute) and normal cardiac axis.

The patient was electively admitted to the Cardiology Department for cryoballoon pulmonary veins isolation. Initial transesophageal echocardiography (TEE), performed to rule out left atrial appendage thrombus, revealed significant thickening of the interatrial septum (Figure 1A). Due to this anomaly, transseptal puncture was performed under TEE guidance, which allowed accurate visualization and proper positioning of the transseptal sheath in the thin region,

resulting in successful transseptal puncture and isolation of the pulmonary veins (Supplementary material, *Videos S1–S3*).

To extend the diagnostics of the anomaly, the patient was referred to cardiac magnetic resonance which revealed hypertrophy of the atrial septum to 27 mm at the thickest point (Figure 1B). The atrial septum presented a homogeneous, hyperintense signal on T1 weighted imaging, similar to that of subcutaneous fat tissue (Figure 1C). T1 relaxation time of the mass measured on the T1 map images was maximum of 237 ms, confirming the lipomatous nature of the tissue (Figure 1D). Based on TEE and cardiac magnetic resonance the lipomatous hypertrophy of the interatrial septum was diagnosed.

LHIS is characterized by excessive adipose tissue deposition (>2 cm) in the atrial septum with typical sparing of the fossa ovalis, which presents as a characteristic hourglass-shaped image. In contrast to cardiac lipoma, the adipose tissue is not encapsulated. The prevalence ranges from 2.2% in patients undergoing multislice CT to approximately 8% when detected by transesophageal echocardiography [1, 2]. A higher prevalence of LHIS has been associated with advanced age, obesity, female gender, and long-term corticosteroid use [3]. Although LHIS is considered a benign finding and does not require specific treatment, in some cases, it may be the cause of cardiac arrhythmias, superior vena cava obstruction, atrioventricular block, and even sudden cardiac death [3]. The severity of these issues appears to be related to the size and extent of the lesion. LHIS should always be differentiated from other cardiac neoplasms and distal metastases.

Without a doubt, the significant thickening of the interatrial septum makes the transseptal puncture procedure more challenging and risky [4]. Moreover, thick interatrial tissue can reduce catheter steerability in the left atrium. The use of echocardiography guidance may reduce the number of periprocedural complications, especially in patients with structural alterations of the heart [5].

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

Conflict of interest: None of the authors have any conflicts of interest or financial ties to disclose.

Funding: None.

REFERENCES

1. Heyer CM, Kagel T, Lemburg SP, et al. Lipomatous hypertrophy of the interatrial septum: a prospective study of incidence, imaging findings, and clinical symptoms. Chest. 2003; 124(6): 2068–2073, doi: 10.1378/chest.124.6.2068, indexed in Pubmed: 14665481.
2. Pochis WT, Saeian K, Sagar KB. Usefulness of transesophageal echocardiography in diagnosing lipomatous hypertrophy of the atrial septum with comparison to transthoracic echocardiography. Am J Cardiol. 1992; 70(3): 396–398, doi: 10.1016/0002-9149(92)90629-d, indexed in Pubmed: 1632413.
3. Xanthos T, Giannakopoulos N, Papadimitriou L. Lipomatous hypertrophy of the interatrial septum: a pathological and clinical approach. Int J Cardiol. 2007; 121(1): 4–8, doi: 10.1016/j.ijcard.2006.11.150, indexed in Pubmed: 17292988.
4. Pillai A, Padala SK, Ellenbogen KA, et al. An Unusual Complication of Transseptal Puncture. JACC Case Rep. 2021; 3(1): 41–46, doi: 10.1016/j.jaccas.2020.11.038, indexed in Pubmed: 34317466.
5. Kołakowski K, Jaworski K, Farkowski MM, et al. A 3D transesophageal echocardiography-facilitated diagnosis and cryoballoon ablation of paroxysmal atrial fibrillation in a patient with cor triatriatum sinister. Kardiol Pol. 2023; 81(3): 294–295, doi: 10.33963/KP.a2023.0010, indexed in Pubmed: 36594535.

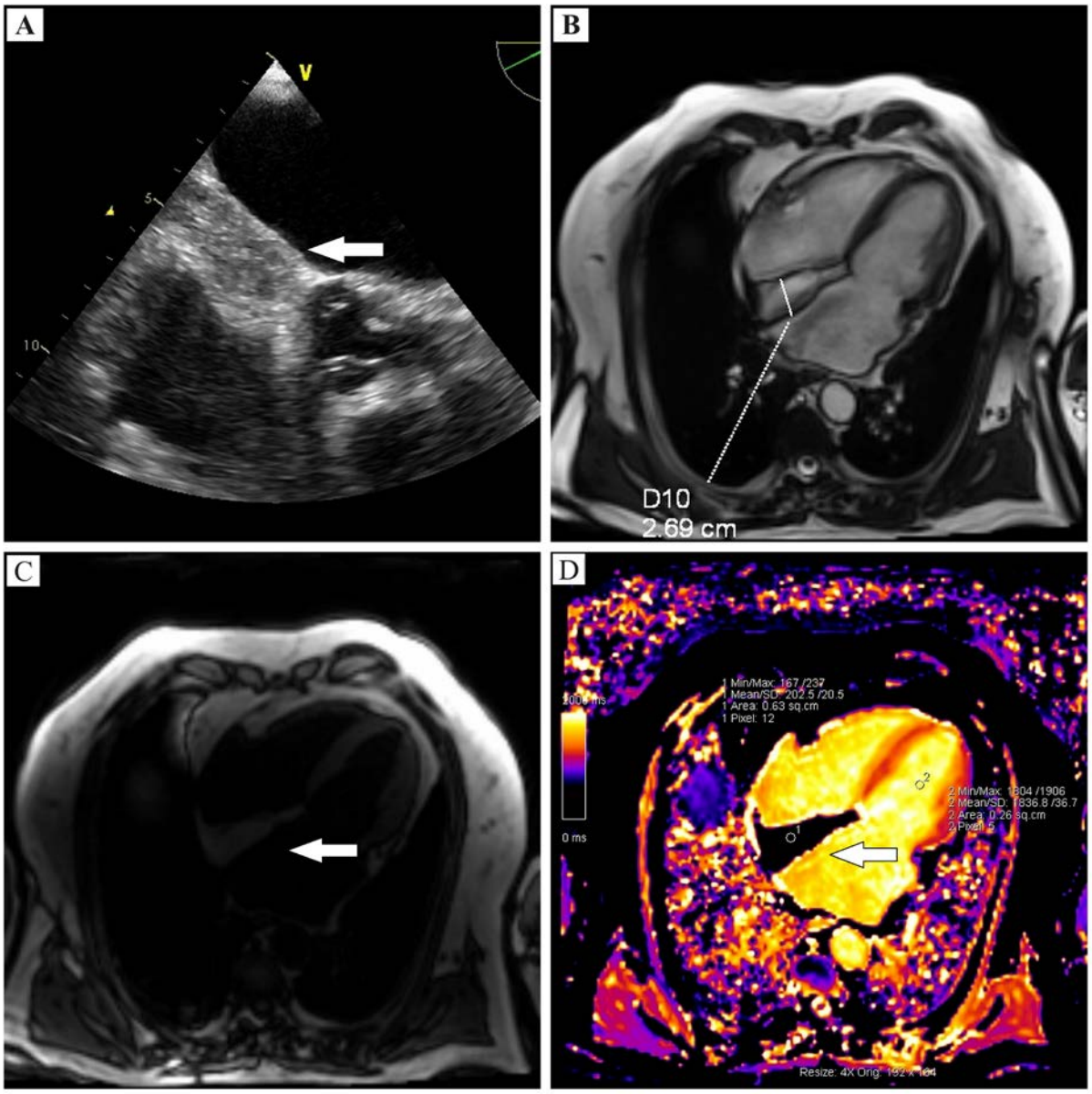

Figure 1. Pictures of interatrial septum with lipomatous hypertrophy of the interatrial septum. **A.** Transesophageal echocardiogram, midesophageal aortic valve short-axis view. **B.** Cardiac magnetic resonance, four chamber view cine image. **C.** T1 weighted image. **D.** Native T1-mapping